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AGRICULTURAL EXTENSION AND COMMUNICATION IN INDONESIA

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IN INDONESIA

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This paper describes the problems and issues confronting Agricultural Extension and Communication in Indonesia. After independence, Indonesia inherited all agricultural infrastructure and institutions, including education and Extension from her predecessor. For many reasons, these institutions were failed to sustain the national demand for food and other agricultural produce.

In the 60's, severe food shortages, especially rice, motivated the policy makers to launch mass Extension programs such as "BIMAS and INMAS" to pace national rice production increase. After 26 years of hard work, a notable success was achieved. In 1985, Indonesia was self sufficient in rice.

However, there are costs to bear. The centralized plan gives little room for local initiatives. Extension organizations are fragmented and agents are concentrated in some specific areas of development. Besides, when reaching the predetermined targets are heavily emphasized and communication is highly structured, two-way communications between front line workers and policy makers are hindered. The policy makers at the center rarely receive accurate feedback. This indicates that evaluation of Extension activities, is not directed toward what the administrators should see. Therefore, evaluation fails to yield accurate judgment, which the agricultural development policy makers actually need.

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AGRICULTURAL EXTENSION DEVELOPMENT

IN INDONESIA: AN OVERVIEW

Agricultural Extension, basically, is an educational service, which is created purposively to support national agricultural development. For this reason, Extension assists farm operators to fulfill their development needs, especially those relating to information, knowledge and skills to solve daily farming problems.

Agricultural Extension is becoming more important when national expectation for increasing food and other agricultural produce depends on many small farmers.

Overtime, the development of Extension concept adopted by a particular nation is closely related to its history and the ruling elites perception of community education and development.

In relation to this, reviewing the growth of the Indonesian Agricultural Extension Service has to be made in terms of her historical experiences during the colonial era and after the colonial era ends.

The Netherlands Indie Era

At first, the Netherlands Indie government did not seriously plan the development of the so called folk agriculture. Development assistance to the natives was rarely provided and if any, it was given incidentally. In this case, the officer in charge was the "Mandatory Plant Inspector." Later, crop improvement, including rice, though it was done mainly through written orders to the colonial civil service, was initiated in the

beginning of 19th century. (Paerels, 1930).

In 1874, the colonial administration assigned the civil servants of the Dutch national to improve the rice cultivation and to assist the native farmers to increase their production. However, the assistance was provided indirectly through dissemination of experiences obtained in the experimental farms. In this relation, the colonial administration built experimental farms in several locations, including in the botanical garden in Bogor.

Further, in 1889 the director of botanical garden in Bogor was instructed to build various types of demonstration farms as models for folk agriculture. Later in 1903, a three year vocational agriculture school was built in the botanical garden to train prospective lower rank estate crop officers and Native Civil Servants (Paerels, 1930).

On January 1, 1905 the colonial government established the Department of Agriculture. This department was to provide technical assistance to the native farmers. Additionally, the department was also responsible in planning and conducting practical agricultural and estate plantation education at Vocational Agriculture School in Bogor and in implementing practical courses in Rice Research Institute and in other demonstration farms. However, this department had no direct responsibility in disseminating agricultural knowledge to the natives. This activity was accomplished by the Native Civil Service (Paerels, 1930).

Lack of trained personnel limited the effect of the demonstration farms on the communities. In 1908 the colonial administration appointed a vice plant inspector for supervising

the agricultural development outside Java. At the same time, the administration also established an advising body consisted of five persons. They were appointed as the native agricultural development experts in the Department of Agriculture (Paerels, 1930).

This advising body assisted the Department of Agriculture to gather agricultural information from various parts of the country such as the extent of crop pest and disease invasions and assessed agricultural situation in general. Additionally, this body was also given responsibility to publish reports concerning earlier subjects. However, it did not directly assist the native farmers. Later, this body grew into Folk Agricultural Service (Paerels, 1930).

In 1909, the colonial administration trained the native youths as prospective Native Adjunct Agricultural Advisors at the Agricultural Vocational School in Bogor. Their future work would be to provide technical assistance to the native farmers. At this time, there was a growing awareness among the colonial officials that farmers education was the best way to develop agriculture. For this reason, the Agricultural Inspector, the Agricultural Advisors and the Native Adjunct Agricultural Advisors became the center for folk agricultural development (Paerels, 1930).

As the result of this development, the Department of Agriculture changed the Industrial Crop estates and Rice and Legume Research Institute functions into mainly doing scientific research. Their involvement in Extension was limited to the advisory capacity only (Paerels, 1930).

In 1911, the colonial administration included trade and handicraft development as another responsibility of the Department of Agriculture. Additionally, the administration strengthened the educational division of the department so it could provide better service for the native's agricultural development. In conjunction with this, the regional supervisors were given greater responsibilities to manage all agricultural development issues, including Extension (Paerels, 1930).

In 1913, the Vocational Agriculture School in Bogor was converted into Secondary Agriculture School. This school provided training for prospective native extension agents in agriculture, forestry, estate crops and rural credit (Paerels, 1930).

Further the Department of Agriculture created a special division for promoting folk agricultural development in 1920. The function of this division was to maintain current achievement and to ensure program continuity, regardless of change of personnel in charge in a particular area (Paerels, 1930).

For this reason, the Agricultural Advisors had to make a detailed working programs, which could be changed with the consent of the Agricultural Service head only (Paerels, 1930).

In 1930, the agricultural officers gained better understanding of folk agriculture. Farming was no longer seen as separated from the farmers; their families, their needs, their communities and efforts to fulfill their needs. Farmers were no longer considered as ignorant, but was intelligent in "their own world". At this time, Folk Agricultural Service was active in promoting the native farmers development, using educational approach. This approach remained in effect to the end of the

Netherlands Indie administration (Gunung Iskandar, 1969).

The Japanese Occupation Era

In early 1943 , the Japanese Occupation Army took over the control of Indonesian territory from the Netherlands Indie administration. This occupation lasted until 1945. During this period, the Japanese Occupational Army used the Folk Agricultural Service to rally rural inhabitants for it's cause.

At first, people were enthused. They were willing to cultivate their land according to the agents' recommendations. However, when the Japanese officers took over most of their harvests, people began to realize that the Japanese had different purposes in coming to their country.

In the following planting seasons, the Japanese Occupational Administration used threats and punishments to obtain people's obedience. Educational practice was no longer in use and people were forced to cultivate their land. When harvest time arrived, farmers had to submit most of their rice to the occupational officers, in exchange for their lives.

The Independence Movement Era

The period between August 1945 and December 1950 was marked by the declaration of independence, the war of independence, and the acknowledgement of the Republic of Indonesia's sovereignty by the Netherlands.

One important development, that will influence future growth of extension in Indonesia occurred during the independence war. In

a meeting conducted in Madiun from July 1 to 2, 1948, the Folk Agricultural Officers decided to build Rural Extension Center (REC) in every subdistrict in Indonesia (Soewardjo, n.d.).

REC, actually, was a community center, where rural inhabitants could get together for educational, social, and cultural purposes. The center was provided with several meeting facilities and a two hectare demonstration farm. The center offered courses and meetings for improving farmers' knowledge and skills in agriculture, fishery, animal production, forestry, handicraft, etc (Soewardjo, n.d.; Soedarsono Hadisaputro, 1971).

However, the implementation of the plan was delayed for two years, due to the Dutch Military Action II. In 1950, after the acknowledgement of sovereignty, the Government of Indonesia began to build Rural Education Center in various sites of the country, as a part of the welfare plan implementation (Soewardjo, n.d.).

The Independence Era

The independence life of the republic was not as smooth as imagined. Integrating all factions within the country was not an easy task. It took most of then leadership's attentions. Political maneuvers and ventures overshadowed other national activities. As the result, national economic development was neglected. Needless to doubt, the country was in a bad shape at that time.

To make the matter worse, the national agricultural productivity declined sharply; whereas the population growth increased steadily. The logical consequence of this is a severe shortage of food supplies, especially rice in those days.

To overcome this problem, in 1959, the government made a three year plan toward self sufficiency in rice. This plan was accomplished by a body called "Padi Sentra." The most important task of "Padi Sentra" was to implement a mass movement among the villagers to increase rice production. This movement was accomplished through Agricultural Extension activities (Soedarsono Hadisaputro, 1971).

However, "Padi Sentra" faced a lot of problems. These problems hindered "Padi Sentra" from achieving its objectives. In short, the mass movement was failed to conduct the young nation toward self-sufficiency dream in rice. Among the blames were farmers sold the crops while still young to middlemen, improper use of production credits, and lack of responsibilities in credit repayment (Soedarsono Hadisaputro, 1971).

At that time, Institut Pertanian Bogor (IPB) -- a national higher learning body in agriculture -- was concerned with the national problems, especially with the severe shortage of food supplies.

In 1963, IPB launched a campaign among its staffs and students to take action on the national food problem. Then IPB's leadership decided to conduct an action research with the farming communities in several villages in the District of Karawang, West Java (Directorate of Food Crop Extension, p. 13, 1986).

Karawang was chosen because it had the most ricefields with well developed irrigation systems and had a good reputation in rice production.

In the action research, IPB's teaching staffs and students work hand in hand to provide technical assistance to the rice farmers. They were encouraged to learn and to use high yielding seeds, chemical fertilizers, proper irrigation techniques, better weed and insect controls, and better farm management. This technological package was called "Panca Usahatani" (the Five Farming Principles).

This action research demonstrated that with proper guidance from IPB's teaching staffs and students, farmers were convinced to adopt agricultural technology to increase rice production (Directorate of Food Crop Extension, p. 13, 1986).

As expected, the success of IPB's action research had some policy implications, both for higher learning institutions and Agricultural Extension Service.

Later, all higher learning institutions in Indonesia adopted "University Extension" as one mission, in addition to teaching and research. This made higher learning institutions directly involved in finding solutions of the national problems.

Meanwhile, on the basis of IPB's action research results and recommendations of the "Seminar on Agricultural Extension," in 1963, the Department of Agriculture, decided to replicate the IPB's success and to develop a new approach to Rice Extension. It was called "Demonstrasi Massal (DEMAS) or Mass Demonstrations." Its aim was to increase rice production in a large scale. It was implemented in 1964/1965 planting season (Soedarsono Hadisaputro, 1971).

In 1965/1966 planting season, DEMAS was renamed BIMAS ("Bimbingan Massal") or Mass Guidance. The purpose of BIMAS was not limited to increase rice production in a large scale, but also to help farming communities attain better living (Soedarsono Hadisaputro, 1971).

For this reason, BIMAS was interpreted as a planned mass Extension System, involving various government agencies, aimed at developing the farming communities' abilities to support themselves through agricultural cooperative development, adoption of five farming principles ("Panca Usaha"), keeping, processing, and marketing of farm produce and community development (Soedarsono Hadisaputro, 1971).

The great emphasis on rapid development of Agricultural Extension Service created demands for thousands of new agent. At that time, agent's recruitments were directed to fill the Extension Field Worker's and Subject Matter Specialist's positions. In 1973, it was decided that there must be at least one field workers in every village. This decision accelerated the rapid increase of Extension Field Workers. In 1987, the official record showed that Indonesia had 32.185 Extension Workers (Secretariat of the Agency for Bimas Execution, p. 122, 1987a).

Meanwhile, continuous efforts to improve the execution of BIMAS programs is never stop. In addition to BIMAS, there was also INMAS (Mass Intensification). To date, BIMAS has been modified three times.

The first occurred in 1968, when BIMAS was converted into "BIMAS GOTONG ROYONG" or "Allied BIMAS." Under this banner, there was a joint venture between the Government of Indonesia and

private parties, both domestic and foreign. At that time, the Government of Indonesia was short in national and foreign currencies to import fertilizers, insecticides, and sprayers, and to provide production loans to farmers in the entire country. In "Allied BIMAS", the private companies supplied the required production inputs, farm credit, and technical guidance to the farmers. "Allied BIMAS" was executed until mid 1970 (Soedarsono Hadisaputro, 1971).

The second happened in late 1970. This time the "Allied BIMAS" was renamed "BIMAS Yang Disempurnakan (BMD)" or "Improved BIMAS," whereas "INMAS" was converted to "INSUS" (Special Intensification) in 1979 (Secretariate of the Agency for Bimas Execution, p. 1, 1987b). The "Improved BIMAS" was implemented from late 1970 till early 1986.

According to Soedarsono Hadisaputro (1971), "Improved BIMAS" strengthened some of the Extension components, as follows:

First, farmers' education. Extension activities were intensified so as to enhance farmers' knowledge and skills, in the Five Farming Principles.

Second, production credit. Credit organization was improved and credit procedure was simplified. This will make the farmers more convenient in obtaining and returning credit.

Third, the supply and the distribution of production inputs were improved. The distribution centers were built as close as possible to the farming communities, so it would be more convenient for the farmers to purchase the inputs, of the right specification, quantity, quality, price, and timing.

Fourth, farmers were encouraged to keep their rice until harvest. They were encouraged to use mechanical rice processing so they would get more and better rice and, therefore, better price. In this way, the farmers would obtain better income from their farm business.

The above improvements encouraged farmers to increase their farm yields. As a consequence, their income increased significantly. Because of this, they were able to return the production loans to the rural bank on time (Soedarsono Hadisaputro, 1971).

Meanwhile, the Department of Agriculture consisted of five line commodity oriented Directorate Generals (D.G.) each headed by a Director General, i.e., D.G. of Food Crops, Estate Crops, Forestry, Animal Husbandry, and Fisheries. Each had its own Directorate of Extension. Beside the units there was also a BIMAS Secretariat established in 1969 to administer food crop intensification programs. This secretariat was headed by a BIMAS Secretary as executive head. Until 1983, the position was held by the Director General of Food Crops.

In 1974, the government reorganized the Department of Agriculture. Agricultural Research and Extension were housed in two different agencies i.e., Agency for Agricultural Research (AARD) and Agency for Agricultural Education, Training and Extension (AAETE). With the establishment of AAETE, the responsibility for all Agricultural Education, Training and Extension belonged to the agency. All Extension divisions at the national level were disbanded. However, the Extension Workers remain administratively under the "BIMAS" secretariat (Samedi Sumintaredja, p. 35, 1986).

Following the infusion of heavy World Bank funds, the Department of Agriculture adopted the Training and Visit Systems (TVS) in 1977. This working systems aims at improving Extension Agents' knowledge and skills and, at the same time, improving the quality of Extension program delivery to the intended audiences. At first, the TVS was practiced in Food Crops Extension. Later in 1980, it was expanded to other agricultural subsectors, such as animal, estate crops, and fishery productions.

In 1983, there was another reorganization of the Department of Agriculture. This time, Extension divisions were reestablished in four Directorate Generals, i.e., Food Crop, Animal Production, Fishery, and Estate Crop (Directorate of Food Crop Extension, p. 32, 1986).

So far, the Department of Agriculture had managed to build 1,300 Rural Extension Center (REC) from 1976 till 1984. In 1978, the department established "Komisi Penyuluhan Pertanian," or Advisory Working Group (AWG) and "Forum Koordinasi Penyuluhan Pertanian I dan II (FKPP I dan II)" or Coordination Forums for Agricultural Extension (CFAE), respectively at national, provincial, and district levels. The functions of these bodies were advisory in nature, especially in Extension program development, implementation and evaluation (Samedi Sumintaredja, pp: 35-36, 1986).

In 1979, the working area of REC (WKBPP) was established. This was further divided into smaller working areas (WKPP) which was equal to the size of a village's area. An Extension Worker was assigned to each WKPP. In the same year, the department also established Agricultural Information Center (AIC) to backup the

RECs.

The functions of AICs are to collect, process, produce, and to distribute communication materials needed by Extension Workers. Until now, there are 12 AICs in Indonesia. Additionally, there will be 16 AICs more built around the country (Directorate of Food Crops Extension, p. 95, 1986; Samedi Sumintaredja, p. 36, 1986).

All of the above investments, together with hard works by the policy makers, Extension workers, farmers and other involved parties were fruitfull. Progress after progress were achieved. In line with this, the official records show that "Improved BIMAS" and "INMAS" were able to increase the national rice supplies significantly throughout the years to come.

In 1979 the national rice production record was 17.58 million tons. In 1980, it reached 20.16 million tons. In 1981, it rose to 22.29 million tons. In 1983, it was at 24.01 million tons. In 1984, it rose to 25.93 million tons, and in 1985, it reached 26.54 million tons (Secretariat of the Agency for Bimas Execution, pp. 191-192, 1987a).

On average, the rice production increase was 5.07 percent in six years. However, until 1985, this production increase was not yet enough to feed the increasing population. In 1985, Indonesia reach the self sufficiency status in rice. For the first time in its histry, Indonesia did not need to import its rice supply. This achievement was acknowledged by the Food and Agriculture Organization of the United Nations.

However, in late 1986, due to lack of feedback from lower and middle rank agricultural officers and weaknesses in the feedback mechanism, the policy makers in the Department of Agriculture did not aware of the extent of rice brown planthoppers' invasion.

The press reported that out of 9.8 million hectares of planted rice fields, more than 53.000 hectares were heavily invested by the brown planthoppers (Tempo, December 20, 1986). If no immediate measures was taken, the 1987 production target -- 27 million tons of rice could not be achieved. This could then endanger the self-sufficiency status.

To compensate the loss from the brown planthopper's invasion and to keep the rice production increase, the policy makers once again modified the component of Improved BIMAS scheme. Prior to 1987 planting season began, the new Rice Extension scheme, which was called "Supra INSUS" was launched.

The "Supra INSUS" scheme is based on group approach and area management in rice production. In this plan, farmer groups in an Agricultural Extension Operational Area (AEOA) -- that cover between 600 to 1000 hectares of ricefield -- are encouraged to practice regular cultivation pattern, improved tillage, more high yielding seeds per hectare, use different seed variety next season, smaller planting distance, balance fertilization, use of growth stimulating agent, better pest management, better irrigation, and better post harvest techniques (Secretariat of the Agency for Bimas Execution, pp. 26-34, 1987b).

At first, The "Supra INSUS" scheme was implemented in the well-irrigated rice fields in Northcoast region of West Java.

Then, step by step it was introduced to other parts of Indonesia having well-irrigated rice fields.

Unofficial record released indicated that the new way of growing rice could produce up to 11 tons per hectare. Recently, official report indicates that the temporary 1988 rice production is 41,77 million tons. It is 4.22 percent higher than the 1987 production level. Meanwhile the first forecast for 1989 rice production is 3.09 percent higher than last year's level (Kompas, 20 February 1989; Suara Pembaruan, 4 March, 1989).

The above reports clearly indicate that Agricultural Extension is heavily focused on efforts to achieve and maintain the self-sufficiency status in rice. To balance this trend, however, Department of Agriculture, since 1983, has extended the "BIMAS" programs to include other commodities, such as legume, fruit, animal, fishery, and estate crop productions (Secretariate of the Agency for Bimas Execution, p. 1, 1987a).

However, the scale of activities is still limited. Furthermore, the agricultural policy makers and the Extension corps still believe in commodity approach to agricultural development. This approach divides the Extension organizations and programs according to commodities to be developed.

This approach together with other factors, such as limited transportation and communication facilities and materials, training, salary, and operational funds hindered the performance of Extension Workers. As the result, Samedi Sumintaredja (p. 36, 1986) reported that Extension messages did not reach most of the intended beneficiaries.

MANDATE AND OBJECTIVE OF AGRICULTURAL EXTENSION

Grown from a technical service institution, the current Agricultural Extension in Indonesia offers educational activities to serve the folk agriculture. Along this line, adult education programs are organized to help farming communities solve their own problems by applying scientific knowledge.

Like other Extension movements in the world, the Indonesian Agricultural Extension also strives to promote better farming, better farm business, and better living among the farming communities in Indonesia.

Through Extension farmers learn the new scientific facts about farming and home making. They learn to use the knowledge in operating their farm business and in their family lives.

Further, Extension helps the farmers to learn to use their resources in a better way and to cooperate with other people for mutual purposes and benefits, either locally or nationally.

Parallel with the above statements, Samedi Sumintaredja (p. 34, 1986) reports that in general, the current objectives of Agricultural Extension programs are as follows:

1. to increase farmers' role in agricultural development,
2. to develop more rational farming,
3. to generate participation, initiative and auto-activities of the farm families, and
4. to build progressive Extension institutions composing of Rural Extension Centers (REC) in rural areas, Agricultural Information Centers (AIC) at the provincial level to backstop the REC, and Technical Committees at

sub-district, district, provincial and national levels.

These intentions, are expressed in various types of program currently developed around the "BIMAS" and "Supra INSUS" movements through out the country.

THE EXTENSION ORGANIZATION

The Organizational Set Up

Like other public institution, Agricultural Extension in Indonesia is organized in accordance with the government administrative hierarchy. In this case, Extension organizations appears at national, provincial, district, sub-district, and village levels. To make it clear, the organizational set up of Agricultural Extension is presented as in Figure 1.

Insert Figure 1 here

At National Level

Administratively, the Ministry of Agriculture consists of:

1. four commodity Directorate Generals, each with its own division of Extension (for food crops, estate crops, animal husbandry and fisheries),
2. AAETE with its own Bureau of Agricultural Extension,
3. AARD, and
4. BIMAS Secretariat with one of its own bureau in-charge-of administration of agricultural extension workers.

Therefore, at national level, there are six directors of Agricultural Extension, namely, Directors of Food Crop Extension, Estate Crop Extension, Animal Husbandry Extension, Fishery Extension, Evaluation Studies and Agricultural Resource Development, and Personnel Administration for Agricultural Extension Workers.

All of these directors are coordinated by the National Commission for Agricultural Extension (KPPN) chaired by the Director General of AAETE. Additionally, the Directors of Research Centers are also members of the KPPN. In earlier part, this commission is identified as the Advisory Working Group (AWG).

The main tasks of AWG are to coordinate:

1. the formulation of national policies and strategies for agricultural extension,
2. the research and extension linkages, and
3. the preparation of national agricultural extension programs as well as increasing the capability and quality of agricultural resources.

On the other hand, the Agency for Agricultural Education, Training and Extension (AAETE), is in charge of policy and plan formulations, especially in coordinating agricultural education, training, and Extension and to implement programs in relation to various Directorate Generals. Later, AAETE is also responsible for coordinating the overall Agricultural Extension, and formulating the national Agricultural Extension policies. Since then, AAETE must develop the concept and strategy for modernizing Agricultural Extension in Indonesia.

In 1985, the Coordination Forums for Agricultural Extension at national, provincial and district levels were improved. Additionally, the administration of all extension workers was transferred from the four DGs to the BIMAS Secretariat.

At Provincial and District Levels

At both levels, every local government agricultural services has its own extension section. Consecutively, the BIMAS Secretariat are also established at both levels.

However, at provincial level, there are other institutions closely related to Extension. They are as follows:

1. Representative of the Ministry of Agriculture,
2. Agricultural Information Centre (AIC),
3. Secondary Vocational Agriculture School,
4. Agricultural In-Service Training Centres, and
5. Provincial Coordination Forum for Agricultural Extension (FKPP I); whereas at district level there is a District Coordination Forum for Agricultural Extension (FKPP II).

In conjunction with this, the functions of FKPP I are to translate the national agricultural extension policies and programs according to regional needs, and to coordinate the management of agricultural extension activities.

On the other hand, the functions of FKPP II are to include the provincial agricultural extension policies and programmes in the management of agricultural extension programmes at district level, and to coordinate the management of Agricultural Extension activities in the region in accordance with the programs of FKPP I.

In addition to the above institutions, there are also research institutes, which have national mandates, but distributed based upon certain pedo-agroclimatological conditions.

In line with the decentralization policy of provincial and district government, the current administration of agricultural

services including Extension is in the local governments' hands. Therefore, in carrying out local as well as national agricultural development programs, administratively, the local agricultural services are under the local government control.

However, program wise, the local agricultural services, including their Extension sections are responsible to the Ministry of Agriculture.

At Village Level

Meanwhile, at the village level there is Rural Extension Center (REC). Every REC is the front line head quarter of Agricultural Extension activities. Personnel of every REC consists of: one Head of REC; one Administrative Officer; a maximum of five Field Extension Supervisors (PPUP3), each responsible for developing Extension programs for food crops, estate crops, animal husbandry, fisheries, and agricultural resources (human as well as natural resources), and at least ten Field Workers (PPLs) to conduct regular contact with farmers' leaders and their groups. At present, there are 1,335 RECs at villages throughout the country.

The REC -- as the head quarter of Agricultural Extension activities -- has the following functions:

- a. to develop agricultural extension programs
- b. to monitor and supervise the implementation of Agricultural Extension activities carried out by PPL
- c. to disseminate agricultural information
- d. to teach better knowledge and skills

- e. to recommend more profitable farm business
- f. to conduct demonstration, and
- g. to carry out cooperative efforts to solve farming problems

RESEARCH AND EXTENSION LINKAGES

The Indonesian government is aware that to succeed, agricultural development must be strongly supported by research and development of new technology. Agricultural research and development work in the Ministry of Agriculture was the responsibility of research institutes under the Agency for Agricultural Research and Development (AARD) (Siwi and Mundy, p. 37, 1986).

AARD has 23 research institutes, scattered throughout the country, which conduct various researches. Six of these institutes research on food crops, 2 each on horticulture and animal sciences, 3 each on fisheries and industrial crops, and 7 on estate crops. Each institute has the mandate for research on a particular crop, commodity, or land type (Siwi and Mundy, p. 38, 1986).

Who Identify the Research Topics

Researchers and policy makers identify research topics in several ways:

1. Monthly meetings among the Director General of AARD and the Minister of Agriculture, Junior Minister, the Secretary General, the Inspector General, the Director General, the Director General of AAETE, the Secretary of BIMAS Coordinating Agency and the Secretary of the Sugar Agency.
2. Regular consultations of AARD officials with Echelon I officials in the ministry outside the framework of the above monthly meeting.
3. Regular consultations with other provincial leaders under

either the Governor and/or the Representative of the Ministry of Agriculture in the province.

4. Technical meetings on various development aspects.
5. Research coordination meetings organized by the office of the Minister for Science and Technology.
6. Research management workshops; regular review and planning meetings of Research Institutes and Research Coordination Centers and AARD.
7. The national research coordinated programs on commodities and problem areas.
8. Feedback from Extension workers and agricultural service officers in Research Field Days and in regional consultative meeting.

The Conduct of Research and Field Trials

As mentioned earlier, of the 23 research institutes, there are six reseaches on food crops, two on horticulture, two on animal sciences, three on fisheries, three on industrial crops, and seven on estate crops.

Researchers at the above research institutes are the sole implementors of research programs in their own specific fields. Sometimes, they collaborate with other researchers, especially if the expertise or equipment needed unavailable in their institutions.

The field trials are conducted much in the same way, except for the collaborators, who might be Extension workers or other officials representing the Directorate General, AAETE and BIMAS Secretariat or cooperating farmers.

Improving Research-extension Linkage

Research has no meaning unless the results are communicated to the users. Basically, the research results, can be categorized into :

1. Information on policy issues for policy makers,
2. Information and other forms of research results for formulating packages of technology,
3. Information, prototypes of equipment, and other forms of research results which can be applied directly in agricultural industry by the private sector, and other adopters, and
4. New developments in science and technology important to higher education and other research organizations.

Therefore, the recipients of research results are policy makers, extension personnel, university people, other researchers, and the private sector.

On the other hand, these users are also sources of ideas for research programs and in some instances are able to assist the research activities. These situations affirm the importance of establishing strong linkages between research with its users particularly with extension system.

For long, some research communication activities have been accomplished for updating knowledge and skills of Extension personnel, particularly the Extension SMS. These activities are as follows:

1. Training. The AARD researchers, in cooperation with the Directorates of Extension and AAETE, provide training on

rice production, cropping systems, pest management, and many other agricultural subjects needed by the Extension personnel. Through training, the AARD researchers provide new research results of AARD and other research institutions to update the Extension personnel.

2. Scientific meetings, such as seminars (particularly regular seminars conducted at each research institute) are open to any Extension personnel. They are invited not only to attend the meeting, but also to participate actively in the discussion.
3. AARD encourages Extension personnel to visit research institutes and their constituents (research stations, experimental farms, etc.). The visits can be individual or group, usually with progressive farmers and other people who need scientific information. The visits are always followed with discussion between researchers and Extension personnel and other visitors.
4. Research field days and consultative meeting attended by Extension personnel, university personnel, agricultural leaders, and contact farmers. The field days are conducted at research institutes and/or their constituents to demonstrate to and discuss the performance of the new research results.
5. The use of scientific materials at the AARD's libraries by Extension personnel is becoming more and more common. Requests for information retrieval/search through mail by Extension personnel is increasing. Most information

requested is on agricultural subjects related to local development programs or problems.

6. Distribution of research publications to Extension personnel. All Extension institutions and SMS at national, provincial and district levels, are subscribers to research publications published by AARD. Currently, there are about 50 titles of research journals distributed to Extension workers.

Through the above activities, particularly training, scientific meetings, visits to Research Institutes, and field days, the researchers also receive feedbacks about their works and local problems need research attention.

The above efforts to strengthen Research and Extension linkages are hampered by limited funds, facilities and manpower. The annual increase of fund and improvement of facilities and manpower still could not match the demands, especially after agricultural development shows the signs of success.

If in the past, farmers concentrated their efforts mainly for production increase, nowadays they seek for better technology to obtain more and better farm produce. Consequently, they also look for more effective ways to market their produce.

Until now, the main research communication activity is concentrated on the publication of scientific journals and meetings. However, limited funds cause the journals to be published irregularly. Further, the journal circulation is also limited to some specific segments of scientific community, including students.

This situation limits the potential users, particularly Extension workers' access to recent development in agricultural research. However, there many intended users of research results, especially Extension workers, who are not able to comprehend these journals due to technicalities and lack of relevance of the articles to the Extension situation.

Actually, what the Extension people need are semi popular publications that are relevant to the field situation and problems in reaching the agricultural development goals. Additionally, they also need information in such a format that allows quick and simple applications for the farmers. The editors of such publications should always remember that the Extension workers hardly have sufficient time and competence to convert the scientific materials into simple communication materials.

Similarly, scientific seminars conducted by research institutes are not attractive to the Extension workers simply because the topics are too technical and the research institutes are too far away from their working sites.

Recently, field days, Research-Extension consultative meetings and semi popular research publication aimed at meeting agricultural development objectives and/or solving practical field problems, are intensified by research institutes. These efforts stimulate closer Research and Extension linkage and encourage more interaction between researchers and Extension workers.

To further strengthen research-extension linkage, AARD has recently intensified on-farm researches and established farming system researches with a holistic approach, where researchers,

Extension workers and cooperating farmers are actively involved.

These activities, though still limited in scale, will speed up the flow of information from research to Extension and finally to farmers and vice versa.

Furthermore, these approach also involves local government agencies, regulatory agencies such as agricultural services, production input vendors, rural bank which provide farm credit, and farmers' group.

This approach is surely speed up the diffusion of research results among the users. It is also able to proof to the bank and to the vendors that credit and farm inputs supplied to the farmers, indeed, are required for adoption of new technology.

This experience shows that strong linkages are needed not only between research and Extension, but also with policy makers and private parties at various levels.

SELECTION OF INNOVATION FOR EXTENSION
AND STRATEGY FOR DISSEMINATING NEW TECHNOLOGY

According to an official source, there are several steps that must be completed by new innovations or technologies, before they are ready for public use.

First, the new innovations or technologies must be invented. The inventions could be imported from outside sources or found in domestic research institute. In either case, the inventions will go from a particular research institute, where it was invented or tested to the Research Coordinating Center and AARD. With the center and AARD's recommendations, these inventions will then go to the related Directorate General.

However, in some instances, these innovations may go directly to the related Directorate General.

Second, a panel of expert in the Directorate General will in turn review and assess whether or not the innovations have the required qualities. In this assessment, the innovations will be categorized into:

1. those which are readily applicable in agricultural development program. These innovations will then be used to formulate packages of technology.
2. those which need further verification trials in various sites of the country, before being recommended for application. After being tested, these innovations will be reconsidered for future use.

Third, the Directorate General will then recommend the innovations, after they pass the test, to the Minister of Agri-

culture for certification. After being certified, it will be released to the related Directorate of Extension.

Finally, the Directorate of Extension will deliver the new innovations or technologies to AAETE. AAETE will ask the AIC to prepare information packages regarding the innovations and will further endorse them to Extension Subject Matter Specialists (PPS), and Field Extension Workers (PPL) for further dissemination and public use.

COMMUNICATION'S ROLE IN EXTENSION PROJECTS

Current Perception of Communication

To date, in many Extension projects, whether in food crops or in other agricultural commodities, communication -- mentioned or not -- is considered as methods to reach intended Extension beneficiaries only.

In conjunction with this, Extension recognizes three ways to group the methods to reach its beneficiaries, i.e., (1) direct or indirect, (2) senses used in communication -- audio, visual, or audiovisual, and (3) size of audience to be reached -- individual, group, or mass (Directorate of Food Crops Extension, pp. 47-48, 1986).

Additionally, in selecting the methods, Extension Workers are advised to observe the stages of the adoption process. Accordingly, the agents are suggested to use mass media at awareness and interest stages, group and individual media at evaluation, trial and adoption stages (Directorate of Food Crops Extension, p. 48, 1986).

Message Development

Like other public institutions in Indonesia, Department of Agriculture centralizes the planning of most development programs -- including Extension. Despite its strengths, this practice, systematically eliminates the lower rank officers' initiatives to make local development plans. In this situation, what they usually do is to adjust the local target or simply to execute what has been determined from above.

Considering that the development programs have been preplanned far in advance by the central planners, we could guess that communication message formulation would follow the same manner.

If the flow of information between the center and the periphery is good, then there will be less problems. The centralized plan will fit the local situation and the preplanned messages will be valuable to the Extension beneficiaries.

However, if such condition does not exist, problems will arise. The plan may not be fit to the local condition and the intended beneficiaries are not interested to participate voluntary in such program. Further, the field workers may not be able to execute the plan and may not be willing to provide feedback to the central administration, until the very last moment. In this situation, the centralized preplanned messages will have no use to the beneficiaries.

In Food Crop Extension, especially rice, the Agency for Bimas Execution (ABE), the Directorate of Food Crop Extension (DFCE) and Agricultural Information Center (AIC) might have a lot of say in message formulations.

In such situation, AIC made the printed media such as brochures, posters, flipcharts, leaflets, etc., for Extension use according to guidelines supplied by AWG, ABE and DFCE in central administration office in Jakarta.

Next, AIC's people also need to consider suggestions from members of Provincial and District Coordination Forums for Agricultural Extension (CFAE).

Finally, the AIC's people have to adjust the message plan with: (1) the results of certain commodity field trials, and (2) the technical specifications of each medium planned (Department of Agriculture, p. 34, 1985). With so many guidelines and suggestions, the AIC's people, indeed, could have made better communication materials for Extension purposes.

The above descriptions indicate how strong the central planners' roles in Extension message development. The predominant thought seems that the knowhow of agricultural commodities is universal. Therefore, When it comes to Extension message formulation, the planners see no reason for difference. In this case, one brochure or flipchart will be fit to any place.

Earlier in this paper, there is a statement about adoption of Training and Visit Systems of the World Bank. This TVS brings another implication to Extension message formulation.

The TVS requires Extension agents to visit farmer groups regularly -- once every two weeks. In every visit, the agents should find out the farmers' problems and brings back the problems to the REC. The resource persons at REC should help the agents analyze, solve the problems, and then, train the agents so as to be able to help the farmers solve their problems.

In a way, this TVS encourages the agents to formulate their own program messages based upon the beneficiaries' problems. However, since the Extension agents do not have adequate training in communication -- the most they can do -- is to deliver oral messages to the farmers. If the REC's resource persons could train the agents well enough, the agents might be able to demonstrate how to solve the problems to the farmers.

On the other hand, if the REC doesn't have any resource person to back up the agents, theoretically, the agents could go to a research institution, to an agricultural college or to an AIC. However, in most cases, the three institutions are not in their neighborhood. With almost no communication facilities at hand and very limited operating funds, these institutions are practically not available to the Extension agents.

Summing up, if the TVS runs well, there are at least two ways for Extension message development in Extension projects. In the first way, it is the central planners who formulate the messages in advance, and in the second way, it is the Extension agents who formulate their own messages based upon the beneficiaries' problems and issues. In the end, it will be nice, if the two ways could meet somewhere in the middle and then flexibly practice.

Deciding the Media-Mix in Agricultural Development Campaign

How the media-mix is decided in an agricultural development campaign in Indonesia could become an interesting story. A case example of this decision occurred in late 1986, when invasion of rice brown planthopper threatened the national pride, i.e., the newly achieved status of self sufficiency in rice.

In conjunction with this, a public information campaign against the rice brown planthopper began in early November 1986, when the press broke the day with a news about President Soeharto's activity.

That day, the president summoned nine governors, district heads, the coordinator of provincial agricultural officers, and a number of farmer leaders to his office in Jakarta. the president further ask his guests to convey his message to farmers in order not to use 57 types of insectisides to kill the rice brown plant-hoppers. Additionally, they were also asked to report the extent of crop damage immediately, so preventive measures could be taken (TEMPO, p. 76, 15 November 1986).

The press further reported that more than 53.000 hectares out of 9.8 million hectares planted rice fields, were heavily infested with the brown planthoppers (TEMPO, p. 60, 20 December 1986). If no immediate measures were taken, the damage could be much worse, since the insects could invade the uninfested fields with the speed of 1.000 hectares a night (TEMPO, p. 21, 22 November 1986). If this happen, the national rice production target for 1987 planting season -- 27 million tons -- would be less by 1.37 million tons (TEMPO, p. 76, 15 November 1986).

Considering the magnitude of the problems, the government took a severe measure by instructing farmers: (1) not to cultivate rice for about two months on the infested fields, so as to break the life cycle of the brown planthoppers; (2) to substitute the Cisadane and Krueng Aceh seeds with IR36, IR54, and IR56 seeds; and (3) to use Applaud 10 WP or its derivatives as new insecticides to controll the brown planthoppers (TEMPO, p. 76, 15 November 1986).

Consequently, following these decisions, there was a massive public information campaign against the rice brown planthoppers in the entire country. The central government allocated 7.9

billion rupiahs for the campaign (TEMPO, p. 21, 22 November 1986). The funds were made available for buying resistant seeds, importing new insecticides, farm credits, etc.

Meanwhile, segments of target audience aimed at in this campaign were local government officials, local agricultural officers, Extension workers, insecticide vendors, and rice farmers in various parts of the country.

It is interesting that the media-mix included most of the country's media, such as the print media -- both private and public general newspapers, rural newspapers, magazines, posters, brochures, billboards, etc., and the state operated broadcast media such as "Radio Republik Indonesia" (RRI) and "Televisi Republik Indonesia" (TVRI).

In addition to the media, this campaign relied heavily on the government administrative channels. Local government networks, included the provincial, district, subdistrict and village heads and their staff, local agricultural officers, and Extension workers all were actively involved in the campaign.

This campaign was effective. Eventhough, the rice brown planthopper had not been wiped out completely yet, it's invasions could be controlled to a minimum level in the planting seasons to come. For example, in the second week of February 1989, the official report pointed out that in 1st planting season, the brown planthoppers infested 1.311 hectares rice fields only in the NorthCoast region of West Java (KOMPAS, 20 February 1989).

As mentioned earlier, the effort to control the rice brown planthopper's effects in the future, and the strong motive to keep the self sufficiency status in rice, encourage planners at the Agency for BIMAS Execution to launch a new approach to Rice Extension, i.e., the "Supra INSUS."

Pretesting of Extension Communication Materials

The use of communication materials, such as booklets, brochures, posters, leaflets, flipcharts, audio cassettes, slide-sound, films and videos in Agricultural Extension activities in Indonesia is still limited.

With the exception of leaflets and posters, most of other printed materials are not made directly for farmers' use, but for supporting the Extension agents.

In recorded and projected communication materials, the situation is less favorable. Agents rarely use these materials, simply because they are not available, lack of or no equipment, lack of electricity in the villages, not practical and more than every thing else, they are expensive.

To compensate for these weaknesses, the Extension communication strategists rely heavily on the group approaches and use of field demonstration techniques -- using life presentations as much as the agents could.

Along with these problems, evidence at hand pointed out that communication research techniques, including testing and evaluating communication materials are still new to many Agricultural Information officers and Extension. It is no wonder, if pretesting and evaluating communication materials for Extension

purposes has not been practiced yet.

So far, what has been done in communication material production processes is still limited to its early phase. The Extension agents conduct local verification tests on certain commodities -- crops, animals, fish, etc., -- and on their management procedures with cooperating farmers (Department of Agriculture, p. 34, 1985).

Actually, the purpose of this practice is to determine the content validity of planned communication materials under local conditions.

However, this procedure does not go far enough as to cover the strengths and weaknesses in message treatments and presentations, of course, from the beneficiaries' point of views.

For this reason, pretesting and evaluating newly produced communication materials for Extension must become a habit among Agricultural Information Officers.

In the future, to make Extension communications more effective, this practice need to be promoted among the communication planners and strategists in the Department of Agriculture.

Eventhough, the current situation has not reach such a stage -- where communication component is regarded as equal to other agricultural development components, there is a growing awareness of this problem among the Information and Extension officers, currently undergoing graduate training in Development Communications at Institut Pertanian Bogor.

COORDINATING PRODUCTION INPUTS,
SUPPLIES, CREDIT AND FARM INFORMATION

First of all, we need some information about agricultural development management in Indonesia to learn who are involved in coordinating the delivery of production inputs, supplies, and credit with the delivery of information to the end users and how they do it.

To enhance agricultural development, the Department of Agriculture divides the Indonesian territory into 87 Agricultural Development Areas (Directorate of Food Crop Extension, p. 33, 1986).

In this case, an Agricultural Development Area (ADA) is a particular space in each province, which relatively has a homogeneous land and agroclimate quality (Directorate of Food Crop Extension, p. 33, 1986).

Further, every ADA is divided into a number of Rural Extension Center Operational Areas (RECOAs). The size of each RECOA is approximately the same size as one or more subdistricts (Directorate of Food Crop Extension, p. 33, 1986).

Then, in each RECOA is built a Rural Extension Center (REC). In every REC there will be offices, meeting facilities, office and communication facilities, supplies and a two hectare demonstration farm. In addition to its head, the REC has a secretary, and a group of five Extension agents.

Next, each RECOA is divided again into ten smaller development areas, which is called Agricultural Extension Operational Areas (AEOAs). The size of each AEOA is about the same as the

size of a village. It is approximately 10.000 hectares of irrigated rice field or equivalent. In this relation, every unit of dry land or other type of land use is considered equal with 50 percent of irrigated rice field (Directorate of Food Crop Extension, p. 34, 1986).

Then, in every AEOA there is (are) one or more Extension agent(s). The number of the agents depends on the variety of commodity grown in that area (Directorate of Food Crop Extension, p. 35, 1986).

In addition to the Extension agent, in each RECOA or village unit, there are a rural bank (BRI Unit Desa), a rural cooperative (KUD), and some production input and supply vendors (Directorate of Food Crop Extension, pp. 35, 112-116, 1986).

Now, having all of the above description in mind, the question of who coordinates the delivery of production inputs, supplies, credit, and information and how he does it, remains.

At national level, the coordination is accomplished by the Agency for BIMAS Execution (ABE). The head of this agency is the Minister of Agriculture. While the members are officials of the first echelon from all departments and agencies involved in the implementation of BIMAS programs.

They include representatives from the four Directorate Generals within the Department of Agriculture i.e., Food Crop, Animal Husbandry, Fishery, and Estate Crop; Department of Industry, Department of Information, Department of Interior, Department of Finance, Department of Public Works, and Department of Cooperative.

However, the daily activities of this agency is in the hand of the agency's secretary, who reports directly to the Minister of Agriculture.

At the provincial level, the governor of the province coordinates the delivery of production inputs, supplies, credit and information to the user system. While at the district, subdistrict, and village levels, it is the head of each government administration unit that coordinates the business of production inputs, supplies, and information deliveries to the end users.

Of course, in doing the coordination business, the head of each level of government receives assistance from the agricultural officers, including Extension agents.

AGRICULTURAL MARKET INFORMATION

Market information could create certain effects to members of a user system. The kind of effect that will evolve depends on the quality of marketing infrastructure in a particular system. In well developed system, market information will surely be useful to farm producers, whereas in less developed system it seems to have no effect.

However, research indicates that there are at least two reasons why farmers need up-to-date market information. Firstly, a farm producer need market information to make decisions when planning his farm business. He needs information to decide on what crop(s) to grow in a particular season. Then he also needs further information about the price of seed, fertilizer, pesticide, labor, and other services needed to determine how much to invest in that season.

Of the investment needed, he has to decide how much is from his own saving and how much is to be loaned from the rural bank. If he tries to get a loan, then he must also consider how much interest should he pay.

Secondly, the price forecast of the commodity he grows, or the real price after harvest, will help him determine how much revenue he will obtain from his farm business. Of course, when the time to sell his farm produce comes, market information at hand, will strengthen his bargaining position. He could bargain with some middlemen and select the one who offers him the best price.

Collecting and Disseminating
Agricultural Market Information

Official report indicates that the district agricultural officers are responsible for collecting market information, especially agricultural commodity price information regularly. Accordingly, officers in various parts of the country, both in the production areas and in the consumer centers, will monitor the local markets to assess the supply and demand of agricultural commodities, and the price fluctuations from time to time (Directorate of Food Crop Extension, p. 118, 1986).

The district officers then report the market information to provincial officers. From here, the market information will go to a section in the Directorate of Farm Business and Product Processing Development, Department of Agriculture in Jakarta. This directorate will then convey the market information to the Directorate of Radio, Directorate General of Radio and Television, Department of Information (Directorate of Food Crop Extension, p. 118, 1986).

Next, the Directorate of Radio will disseminate the market information through a Radio Republik Indonesia network at 20:05 PM newscast, nightly to a national audience (Directorate of Food Crop Extension, pp. 118-119, 1986). Since the Department of Information requires all private stations to relay the RRI newscasts, then imagine what audience size the radio will reach.

In addition to RRI newscasts, the Directorate of Farm Business and Product Processing Development publishes a monthly bulletin specialized in price and agricultural product market development (Directorate of Food Crop Extension, p. 119, 1986).

Extension's Role in Disseminating Market Information

"When radio is every where, is disseminating market information still one of the Extension tasks?"

Currently radio ownership among rural families is increasing. The richer families could afford to buy the bigger ones, whereas the poor families could only afford the smaller ones. However, regardless of the size, all radios could receive broadcast programs from many stations, either local, national or international.

It has been several years, since the government requires all domestic stations to relay RRI newscasts. Therefore, as long as members of any user systems tune their radios to any station at news time and listen to it, there is nothing to worry that they do not get the message. This, of course, will make the Extension agents' work easier.

However, there may be a lot of farm producers who might not have opportunities to listen to radio, simply because they are too tired after a hard day's work in the farm or because of other reasons. For these farmers, actually, there is a listening group. Here, a group of farmer may listen to a farm broadcast and then discuss the broadcast contents, usually with the guidance from an Extension agent.

In addition to the listening group, Extension workers could also convey the market information to the farm producers during regular home or farm visits. In this way, the Extension beneficiaries would be exposed to the market information.

EXTENSION AND GOVERNMENT RULES ENFORCEMENT

Behind their roles as rural communicators and educators, Extension agents are firstly, members of the Civil Service Corps. They are the front line workers in the Department of Agriculture's bureaucracy in the villages. They work directly with members of the farming communities.

In their capacities as rural communicators and educators, actually, the Extension agents should only be involved in educational and developmental activities.

However, since they are at the front line, and often times, no other member of government bureaucracy could match their abilities and know the field's situation, the temptation to involve them in rule and regulation enforcement are greater.

For this reason, in rural areas, where trained officers are limited, the chances that Extension workers are doing only educational tasks are slim. To many of them, limiting their activities to those tasks only, are a longing privilege, that will not be obtained in the near future.

Here, the Extension workers' tasks varied from those that are developmental to those that are administrative in nature. Listing farmers that will enroll in BIMAS program, to obtain credit and to repay credit, to help contact farmers distribute production inputs and supplies, and to help the rural cooperative to obtain new members are parts of the agent tasks.

Sometimes, the Extension agents are instructed to oversee whether farmers implement the government policies and orders or not, such as planting high yielding seeds resistant to rice brown

planthoppers.

In some other cases, the agents are instructed to work together with the village head staff to destroy high yielding seeds that are no longer resistant to the brown planthoppers but still are grown by the farmers.

Every season, the above administrative and rule enforcement tasks, more than any thing else, take much of the agents' time. As the result, the Extension agents find little time left for their career development, visiting with the farm producers, develop creative programs, let alone to visit the far away research institutions, agricultural colleges, or AIC.

This, probably would partially explain why the agents' contacts with their beneficiaries are relatively low. Consequently, this handicap will further influence the flow of information from the source system to the members of a user system. Providing, the Extension agents have the information, less contact with them would mean less up-to-date information on the part of the user system.

Additionally, the agents' involvement in the policy and order enforcement might as well damage their reputations and credibilities (Suara Pembaruan, 22 February 1989). Surely, this will make their job more difficult.

EVALUATION OF EXTENSION ACTIVITIES

Who Accomplish the Evaluation

Evaluation of agricultural Extension activities in Indonesia are carried out three parties. Firstly, evaluation is accomplished by the Bureau of Agricultural Extension of the AAETE. Secondly, evaluation is also accomplished by various project units within the Ministry of Agriculture, and thirdly evaluation is also accomplished by the Coordination Forum for Agricultural Extension at each level from REC to KPPN.

Criteria and Methods Used

The Bureau of Agricultural Extension carries out its activities in monitoring and evaluation through analysis of signs of development related to the inputs, process, outputs as well as impacts of agricultural extensions activities.

The objectives are to look for ways of overcoming problems or constraints, setting standards as well as recommending corrective actions and improvements of policies and programs of Agricultural Extension.

The main thrust of the activities is to improve and to develop the national Agricultural Extension.

The analysis is done through evaluation studies, problem solving analysis and exploratory studies. Special studies are also undertaken by the bureau when some question requires answer for a particular program or policy issue and where a regular evaluation could not be expected to uncover.

Intensive monitoring and evaluation of Agricultural Extension activities are carried out at REC level. This is handled through the training and visit system.

The results of monitoring and evaluation at REC level, however, do not flow up to the central level so that policy makers are not aware of the overall progress, problems and impacts of the whole operation of the Extension system.

This perennial problem is due to poor communication between headquarters and the fields, and the absence of plan of work of the FKPP II and FKPP I. The recently issued Ministerial Decree concerning the improvement of coordination forums for agricultural extension at all level is expected to remedy the situation.

The third line of monitoring and evaluation i.e. through project activities, follow various methods. One of the methods of project evaluation adopted by AAETE is the logical framework system. This system embodies the concept of causality, namely the logical causal linkage of sequence between the inputs to output to purpose to goals.

In line with the process of unifying the management of Agricultural Extension, a unified monitoring and evaluation system is also at present being explored for providing information to support the operation, management and decision making functions.

Concise and quick reporting from REC level up to the national level, adequate well trained monitoring and evaluation personnel and proper mobility of the personnel are considered to be prerequisite for effective monitoring and evaluation in term of ensuring efficient operation of extension and providing policy

makers with appropriate information on which to base decisions.

Use of Evaluation Report

So far, evidence obtained indicates that evaluation reports, especially in terms of program achievements or failures, such as the one reported in earlier parts of this paper are used to correct or to step-up development policies, plan and implementations.

For instance, the "Supra INSUS" approach was launch not long after the failure of feedback mechanisms. Part of the failure was caused by unwillingness of the lower and middle rank agricultural officers to communicate the faulty cropping system, pest management practice and the inappropriate farmers' attitude toward insecticide use to policy makers at the center.

On the other hand, the feedback mechanism failure was also aggravated by the unwillingness of some policy makers, higher and middle rank officers to search and to listen to unpleasant reports from the fields.

However, recently corrections are made to improve the working mechanisms and to save further development achievements in the years to come.

CONCLUSIONS

The following conclusion are derived from descriptions presented earlier:

1. Problems and issues confronting Agricultural Extension and Communication in Indonesia could not be separated from past historical experiences.
2. Severe food shortages, especially rice, and high population growth pressure, force the policy makers to adopt the commodity approach in developing agriculture. In this relation, rice Extension is given the highest priority, and the BIMAS and INMAS programs are paced.
3. After 26 years of hard work and heavy investment in rice production, including Extension, a notable success was achieved. In 1985, Indonesia was self sufficient in rice, for the first time in its modern history.
4. To keep the above status, the policy makers introduce "Supra INSUS" approach to rice Extension. Accordingly, the new approach is able to pave the road toward further increase in rice production.
5. To formulate sound policies and orders, the administration requires research support services, which it could get from the Agency for Agricultural Research and Development (AARD).
6. Unfortunately, AARD are housed separately from the Agency for Agricultural Education, Training, and Extension (AAETE) that administer Extension. Inappropriate policies, lack of funds for joint activities, and little

coordination between the two, limit contacts among their personnel, especially at the operational level. In general, this make Extension receives less research supports and research receives less feedback from the fields.

7. However, to keep the rice production increase, there seems to be a special arrangement among the Agency for Bimas Execution, Directorate of Food Crop Extension, and Center for Food Crop Research of AARD in new technology assessments. In this way, the rice Extension program may fulfill its technological needs continuously.
8. To support the food production program, the administration develop a highly structured network involving various government agencies at all levels. The program coordinators respectively, are the Minister of Agriculture, the governors, the district heads, the subdistrict heads, and the village heads. For this reason, policies and orders and other messages flow from the center down to the villages.
9. However, this way of doing Extension is not without weaknesses. There are costs to the commodity approach, especially to the heavy focus on rice production. Extension organizations are fragmented and agents are concentrated in some specific areas of development. For this reason, other agricultural commodity development receive less thrusts.
10. Besides, the centralized pattern of planning leaves little room for the lower officers to make plan suitable for local conditions. The local production targets are

determined from above. So far, intensive orders to the lower officers to reach the target and the highly structured communication pattern in the agricultural bureaucracy, hindered two-way communications between front line workers and policy makers. As a result, the policy makers at the center rarely received accurate feedback.

11. This indicates that evaluation of Extension activities, though it is regularly conducted, probably is not directed toward what the administrators should see. In this way, evaluation fails to yield accurate judgment, which indeed, the agricultural development policy makers need.

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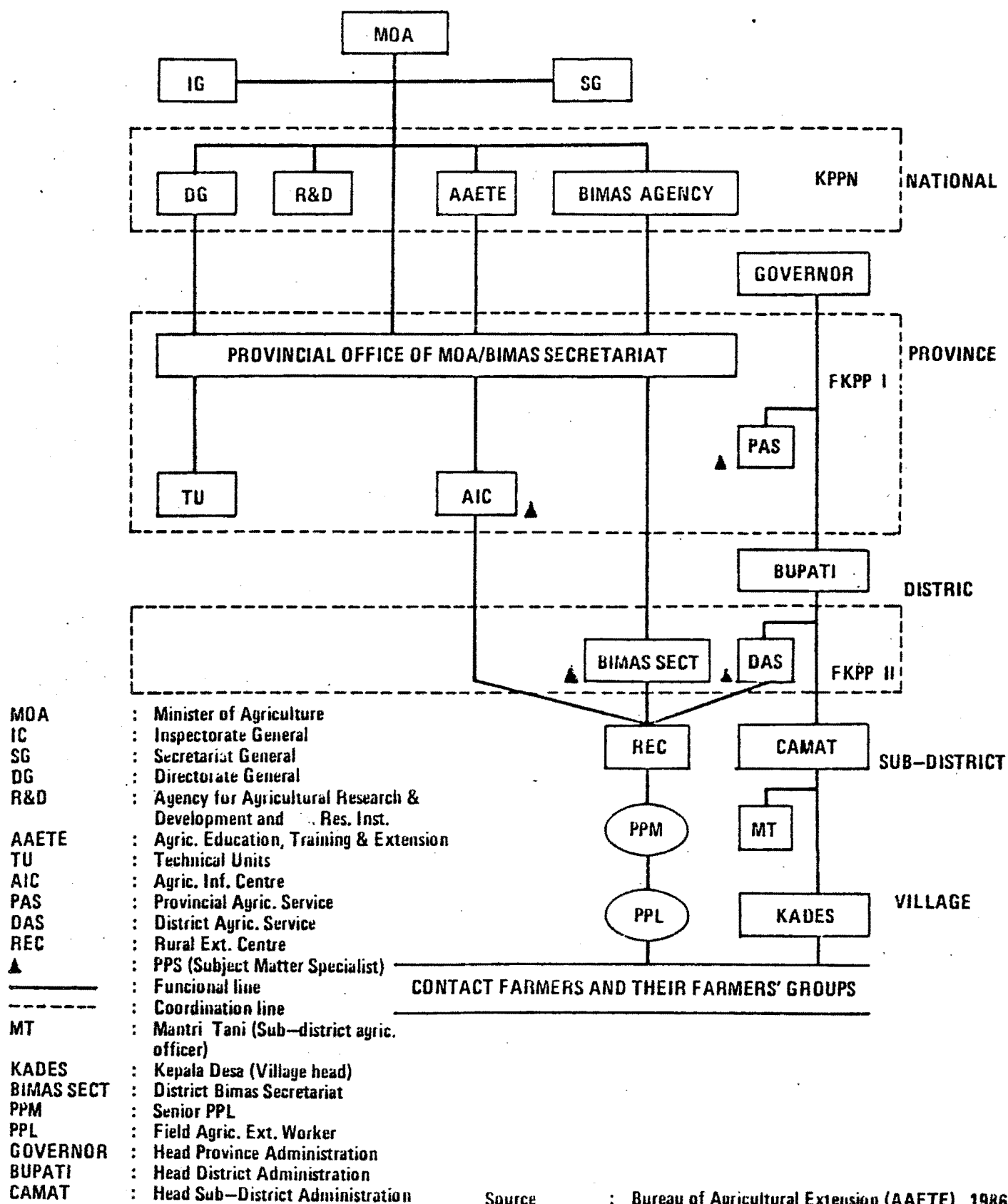
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FIGURE 1. ORGANIZATION STRUCTURE OF AGRICULTURAL EXTENSION



Source

: Bureau of Agricultural Extension (AAETE), 1986